

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number
WO 2005/076557 A1

(51) International Patent Classification⁷: **H04L 27/26,**
G06F 17/14

Rueschlikon (CH). **SCHOTT, Wolfgang** [DE/CH]; Alte Landstrasse 80, CH-8803 Rueschlikon (CH). **WEISS, Beat** [CH/CH]; Schoenbuel, CH-6313 Edlibach (CH).

(21) International Application Number:
PCT/IB2004/003799

(74) Agent: **KLETT, Peter M.**; IBM Research GmbH, Zurich Research Laboratory, Saeumerstrasse 4 / Postfach, CH-8803 Rueschlikon (CH).

(22) International Filing Date:
19 November 2004 (19.11.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
04405006.0 6 January 2004 (06.01.2004) EP

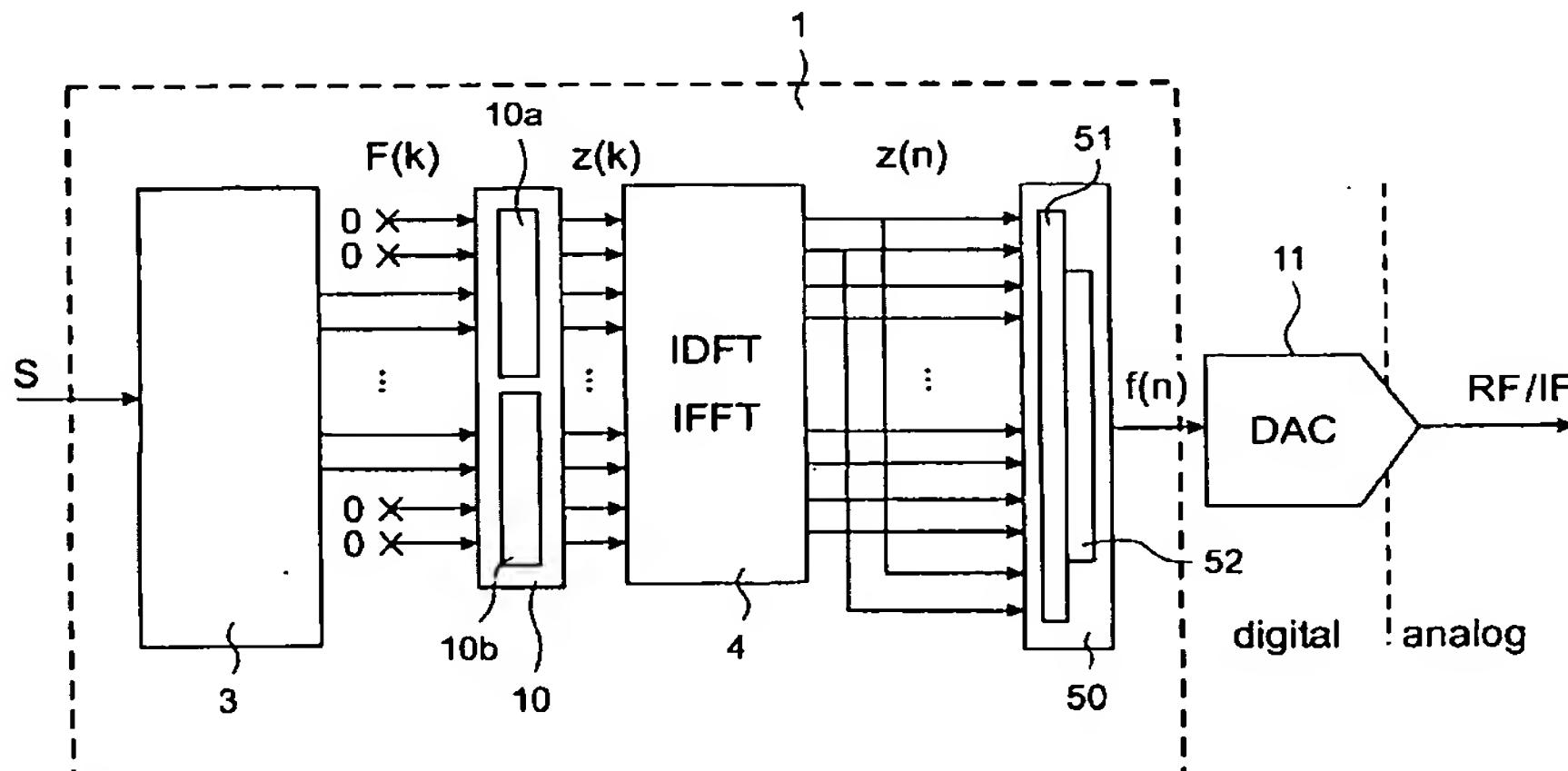
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,

(71) Applicant (for all designated States except US): INTERNATIONAL BUSINESS MACHINES CORPORATION [US/US]; New Orchard Road, Armonk, NY 10504 (US).

(72) Inventors; and
(75) Inventors/Applicants (for US only): **FURRER, Simeon** [CH/CH]; Soodstrasse 21, CH-8134 Adliswil (CH). **JELITTO, Jens** [DE/CH]; Saeumerstrasse 11, CH-8803

[Continued on next page]

(54) Title: MODULATION AND DEMODULATION OF OFDM SIGNALS



(57) Abstract: The invention relates to a method for modulating sub-carrier symbols to an intermediate-frequency OFDM signal having even and odd samples, including following steps: - transforming a number N of the sub-carrier symbols to pre-processed sub-carrier symbols; - performing a complex inverse discrete Fourier transformation (IDFT) on the pre-processed sub-carrier symbols to generate complex output symbols; and - transforming the complex output symbols to the intermediate-frequency OFDM signal, wherein the sub-carrier symbols are transformed so that the even and odd samples of the intermediate-frequency OFDM signal are given by real and imaginary parts of the complex output symbols.

WO 2005/076557 A1



SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*